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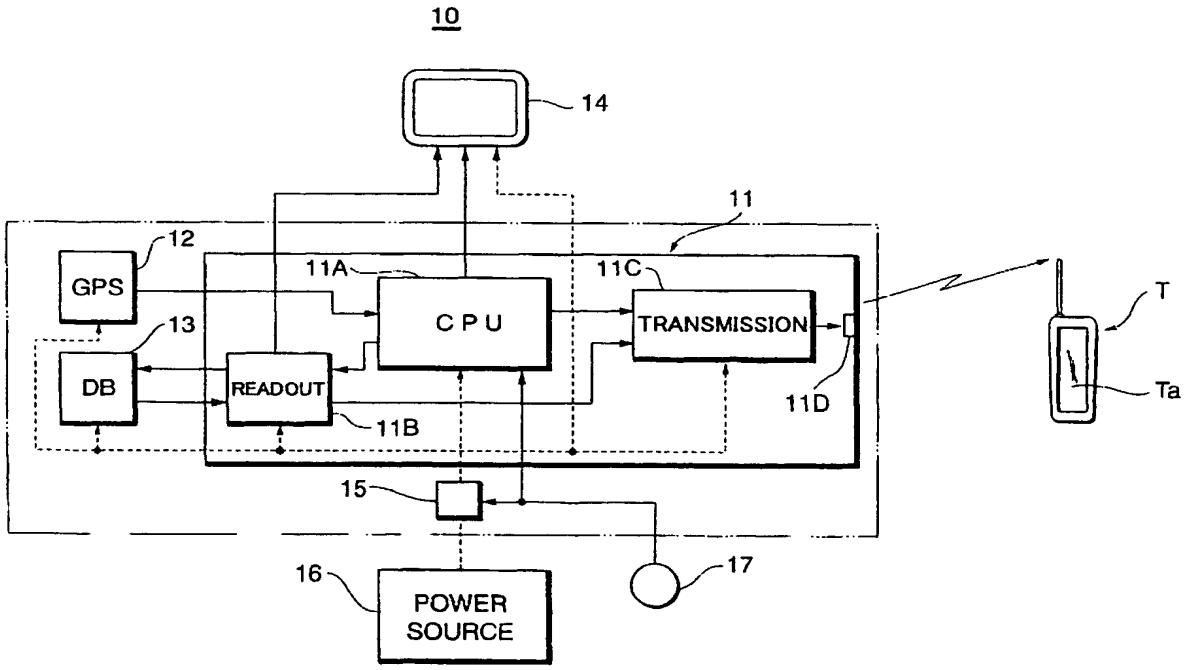
(54) Device for copy map-information from car navigation system

(57) There are provided a CPU (11A) and an ignition key switch (17) detecting that a vehicle stops, and a transmission circuit (11C) and a transmitter (11D) for transmitting a map-image data for displaying a map image on a display (14) of a car navigation system, to a portable terminal (T) when the CPU (11A) and the ignition key switch (17) detects that the vehicle stops.

FIG.1



EP 1 122 516 A2

Description

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

[0001] The invention relates to a device for copy an area map information into a portable terminal for use.

DESCRIPTION OF THE RELATED ART

[0002] In recent years, portable terminals such as mobile telephones having a large display panel, PDAs (Personal Digital Assistants) have achieved widespread use.

[0003] A method of using a navigation system in which a communication function of the portable terminal and an image display function comprising a display panel are used to display a map image on the display panel of the portable terminal is suggested.

[0004] However, in order to display the map image on the display panel of the portable terminal, it is needed to copy the map information of an area to which a user will go from then from a database storing map information and store it in the portable terminal in advance. When the map information is copied, the user must designate an area to which the user goes from then, and perform operation for copy as occasion demands. This is considerably inconvenient if the user is in hurry to go there.

SUMMARY OF THE INVENTION

[0005] The present invention has been made for solving the problems arising when an area map information is stored in a portable terminal for use as described above.

[0006] It is therefore an object of the present invention to provide a device for copy map information which is capable of facilitating the storage of the map information of a required area in a portable terminal.

[0007] To attain the above object, a device for copy map-information from a car navigation system according to a first invention features in that vehicle stop detection means provided in the car navigation system for detecting that a vehicle stops, and transmission means provided in the car navigation system for reading out image data of a map including a stop position of the vehicle from a map-image database when the vehicle stop detection means detects that the vehicle stops to transmit it to a portable terminal.

[0008] In the device for copy map-information from a car navigation system according to the first invention, when the vehicle arrives at a destination and stops, the vehicle stop detection means detects the stopping of the vehicle.

[0009] The vehicle stop detection means detects that the vehicle stops, and hence, the transmission means transmits the image data of the map including the stop position of the vehicle read out from the database of the car navigation system to the portable terminal carried by a driver. The image data is then stored in memory mounted in the portable terminal.

[0010] Therefore, according to the first invention, when the driver dismounts the vehicle and moves to the final destination near the vehicle, since the data of the map image including the place where the vehicle is parked and the neighborhood is automatically stored in the portable terminal, the map image based on the map-image data is displayed on the display panel, thereby to allow the driver to easily check a way to the final destination.

[0011] To attain the aforementioned object, the device for copy map-information from a car navigation system according to a second invention features, in addition to the configuration of the first invention, in that the transmission means wirelessly transmits the map-image data to the portable terminal.

[0012] According to the device for copy map-information from a car navigation system of the second invention, if the driver simply carries the portable terminal, when the driver is dismounting the vehicle, the image data of the map of the neighborhood of the parked vehicle can be automatically stored in the portable terminal.

[0013] To attain the aforementioned object, the device for copy map-information from a car navigation system according to a third invention features, in addition to the configuration of the first invention, in that the vehicle stop detection means detects an OFF signal of an ignition key switch to detect the stopping of the vehicle.

[0014] According to the device for copy map-information from a car navigation system of the third invention, the detection of the stopping of the vehicle when the map-image data is transmitted to the portable terminal is performed based on the OFF signal outputted from the ignition key switch by handling when the driver turns off a vehicle engine off. When the OFF signal is outputted, the transmission of the map image data to the portable terminal is implemented.

[0015] To attain the aforementioned object, the device for copy map-information from a car navigation system according to a fourth invention features, in addition to the configuration of the first invention, in that the vehicle stop detection means detects a vehicle speed of the vehicle to detect the stopping of the vehicle.

[0016] According to the device for copy map-information from a car navigation system of the fourth invention, the detection of the stopping of the vehicle when the map-image data is transmitted to the portable terminal is performed based on the vehicle speed of the vehicle. When the vehicle speed becomes zero, the stop of the vehicle is detected. The transmission of the map-image data to the portable terminal is implemented.

[0017] To attain the aforementioned object, the device for copy map-information from a car navigation system

according to a fifth invention features, in addition to the configuration of the first invention, in that set means for setting a range of the map-image data transmitted from the transmission means to the portable terminal is further provided.

[0018] According to the device for copy map-information from a car navigation system of the fifth invention, a range of the map image displayed by the map-image data transmitted from the car navigation system to the portable terminal, for example, a distance or a bearing from the parking position of the vehicle, may be set in advance by the set means.

[0019] To attain the aforementioned object, the device for copy map-information from a car navigation system according to a sixth invention features vehicle stop detection means provided in the car navigation system for detecting that a vehicle stops, and storage means provided in the car navigation system for reading out image data of a map including a stop position of the vehicle from a map-image database when the vehicle stop detection means detects that the vehicle stops to store it in a record medium connectable to a portable terminal.

[0020] In the device for copy map-information from a car navigation system according to the sixth invention, upon arriving at the destination and stopping, the vehicle stop detection means detects that the vehicle stops.

[0021] The vehicle stop detection means detects the stop of the vehicle, and hence the storage means temporally stores the image data of the map including the stop position of the vehicle from the database of the car navigation system into the record medium.

[0022] The driver removes the record medium storing the map-image data from the car navigation system and connects it to the portable terminal, thereby to display the map image based on the stored map-image data on the display of the portable terminal.

[0023] As described above, according to the sixth invention, when the driver dismounts the vehicle and moves to the final destination near the vehicle, since the data of the map image including the place where the vehicle is parked and the neighborhood is automatically stored in the record medium, by mounting the record medium in the portable terminal, the map image based on the map-image data is displayed on the display panel, thereby to allow the driver to easily check a way to the final destination.

[0024] These and other objects and advantages of the present invention will become obvious to those skilled in the art upon review of the following description, the accompanying drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0025] Fig. 1 is a circuit diagram showing an example of an embodiment according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Most preferred embodiment according to present invention would be described below in detail with reference to the accompanying drawings.

[0027] Fig. 1 is a circuit diagram illustrating an example of an embodiment of a map-information copy device from a car navigation system according to the present invention.

[0028] In Fig. 1, a car navigation system 10 includes a control unit 11, a GPS 12 detecting a position of a vehicle mounting the car navigation system 10 with radio waves from a satellite, a database (CD-ROM or DVD-ROM) 13 storing map-image data, and a display 14 displaying a map image for navigating.

[0029] The control unit 11 in turn includes a CPU 11A exercising control over the control for displaying the map images in the car navigation system 10, a readout circuit 11B reading required map-image data from the database 13 by control of the CPU 11A, and a transmission circuit 11C and a transmitter 11D for transmitting the map-image data read out by the readout circuit 11B to a portable terminal T as described later.

[0030] The control unit 11, GPS 12, database 13 and display 14 are connected via a delay circuit 15 to a power source (battery) 16.

[0031] The CPU 11A of the control unit 11 and the delay circuit 15 are connected to an ignition key switch 17 to receive an ON/OFF signal thereof.

[0032] Next, the following explanation is made for steps of copy the area of map information by the above map-information copy device.

[0033] When the ignition key switch 17 is turned on and the vehicle starts, the GPS 12 of the car navigation system 10 mounted in the vehicle detects a travel position of the vehicle, and outputs the detected position data to the CPU 11A of the control unit 11.

[0034] The CPU 11A outputs a readout signal to the readout circuit 11B in accordance with the received position data, to control it to read out map-image data including an area in which the vehicle is traveling at this point in time from the database 13.

[0035] The map-image data read out from the database 13 is output from the readout circuit 11B to the display 14, and also the position data detected by the aforementioned GPS 12 is applied to the display 14. In the display 14, a map image based on the map-image data is displayed, and also a mark representing a present position of the vehicle is displayed on the map image based on the position data.

[0036] The operation up to here is the same as that in a conventional car navigation system.

[0037] In this way, the vehicle arrives at a destination under navigation, and a driver turns the ignition key switch 17 off, whereupon the ignition key switch 17 applies the OFF signal to the CPU 11A and the delay circuit 15.

[0038] The delay circuit 15 receiving the OFF signal turns off power supply from the power source 16 to the control unit 11, GPS 12, database 13 and display 14 after the expiration of a predetermined time interval from that time.

[0039] The predetermined time interval until the delay circuit 15 turns power off is set at time of the completion of the transmission of the map-image data to the portable terminal T as described later.

[0040] Upon reception of the OFF signal from the ignition key switch 17, the CPU 11A outputs a command signal for controlling the transmission circuit 11C to transmit the map-image data, to the readout circuit 11B.

[0041] The readout circuit 11B receives the command signal from the CPU 11A, and outputs the map-image data, read out from the database 13 at that time, to the transmission circuit 11C. The transmission circuit 11C transmits the map-image data from the transmitter 11D to the portable terminal T.

[0042] In this way, the portable terminal T stores the map-image data transmitted from the car navigation system 10 in an internal memory, and displays a map image on a display panel Ta based on the map-image data.

[0043] After completing the transmission of the map-image data to the portable terminal T, the delay circuit 15 is actuated to turn off the power supply from the power source 16 to the car navigation system 10.

[0044] As described above, the vehicle travels during the operation of the car navigation system 10, and after it arrives at the destination, the ignition key switch 17 is turned off. From this time until the power supply to the car navigation system 10 is turned off, the image data of the map image displayed on the display 14 when the vehicle stops is automatically transmitted to the portable terminal T and stored therein.

[0045] For this reason, when the driver dismounts the vehicle and moves to the final destination near the vehicle, since the data of the map image including the place where the vehicle is parked and the neighborhood is stored in the portable terminal T, the map image based on the map-image data is displayed on the display panel Ta, thereby to allow the driver to easily check a way to the final destination.

[0046] It should be noted that the map-image data might be transmitted through a wire from the car navigation system 10 to the portable terminal T.

[0047] The above explanation is made for the case where the map image data is transmitted from the car navigation system to the portable terminal by means of the OFF signal from the ignition key switch. However, vehicle speeds of the vehicle may be detected and the map-image data may be transmitted when the vehicle stops.

[0048] Further, the map-image data may not be transmitted directly from the car navigation system to the portable terminal, and it may be temporally stored in a record medium connected to the car navigation system, and the record medium may be mounted in the portable terminal. Alternatively, a range of the map image displayed by the map-image data transmitted from the car navigation system to the portable terminal, for example, a distance or a bearing from the parking position of the vehicle, may be set in advance.

[0049] The foregoing description is made for the case where the vehicle travels under the navigation and the map image is displayed on the display of the car navigation system until the vehicle stops. However, the map image may not be displayed on the display when the vehicle stops.

[0050] The terms and description used herein are set forth by way of illustration only and are not meant as limitations . Those skilled in the art will recognize that numerous variations are possible within the spirit and scope of the invention.

Claims

1. A device for copy map-information from a car navigation system (10), comprising:
   - vehicle stop detection means (11, 11A, 15, 17) provided in the car navigation system (10) for detecting that a vehicle stops, and
   - transmission means (11B, 11C, 11D) provided in the car navigation system (10) for reading out image data of a map including a stop position of the vehicle from a map-image database (13) when the vehicle stop detection means (11, 11A, 15, 17) detect that the vehicle stops and adapted to transmit it to a portable terminal (T).

2. The device according to claim 1, wherein the transmission means (11B, 11C, 11D) wirelessly transmit the map-image data to the portable terminal (T).

3. The device according to claim 1 or 2, wherein the vehicle stop detection means (11, 11A, 15, 17) detect an OFF signal of an ignition key switch (17) to detect the stopping of the vehicle.

4. The device according to any of claims 1 to 3, wherein the vehicle stop detection means (11, 11A, 15, 17) detect a vehicle speed of the vehicle to detect the stopping of the vehicle.

5. The device according to any of claims 1 to 4, further comprising set means for setting a range of the map-image data transmitted from the transmission means (11B, 11C, 11D) to the portable terminal (T).

6. A device for copy map-information from a car navigation system (10), comprising:

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- vehicle stop detection means (11, 11A, 15, 17) provided in the car navigation system (10) for detecting that a vehicle stops, and
- storage means provided in the car navigation system (10) for reading out image data of a map including a stop position of the vehicle from a map-image database (13) when the vehicle stop detection means (11, 11A, 15, 17) detect that the vehicle stops and adapted to store it in a record medium connectable to a portable terminal (T).

FIG.1

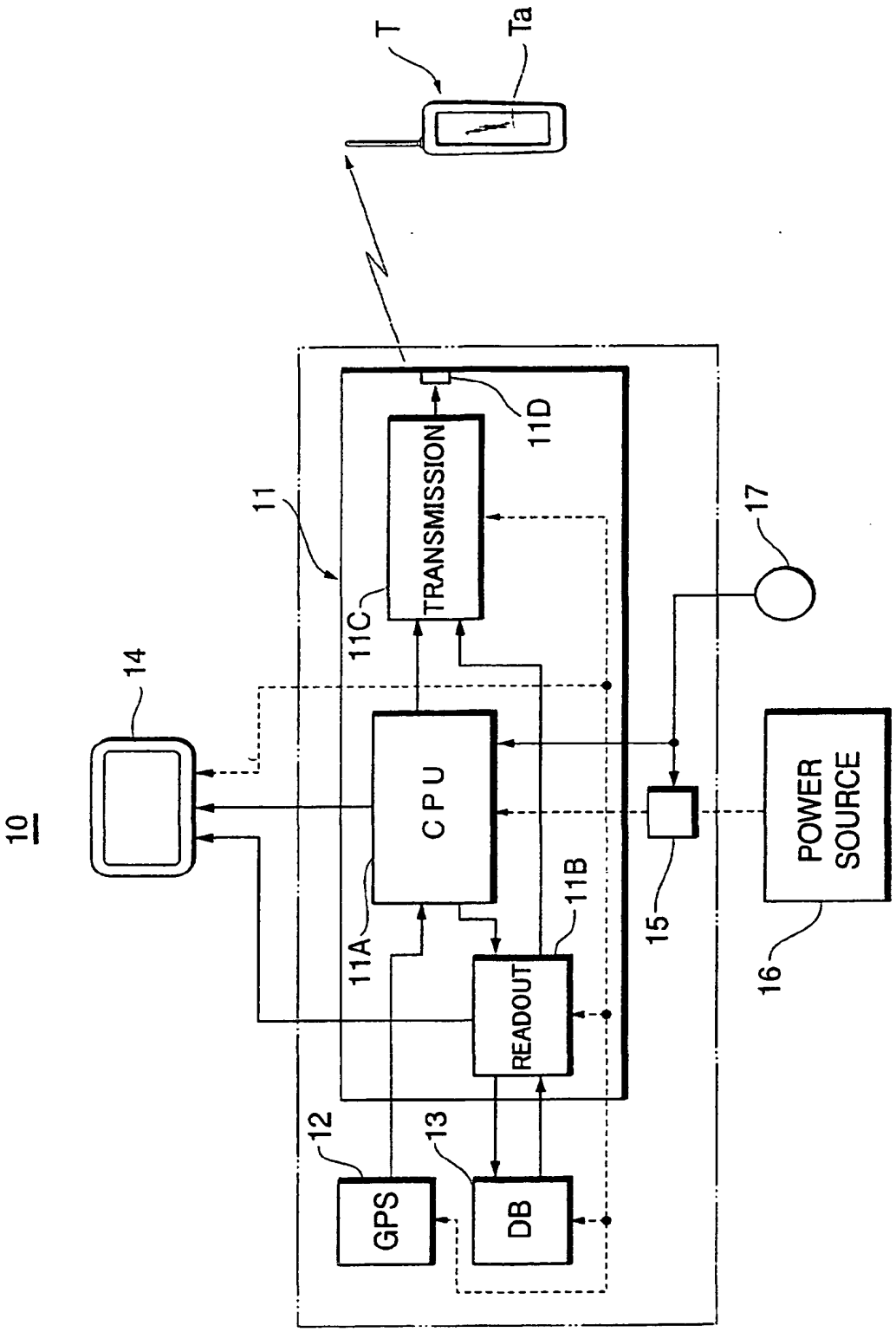

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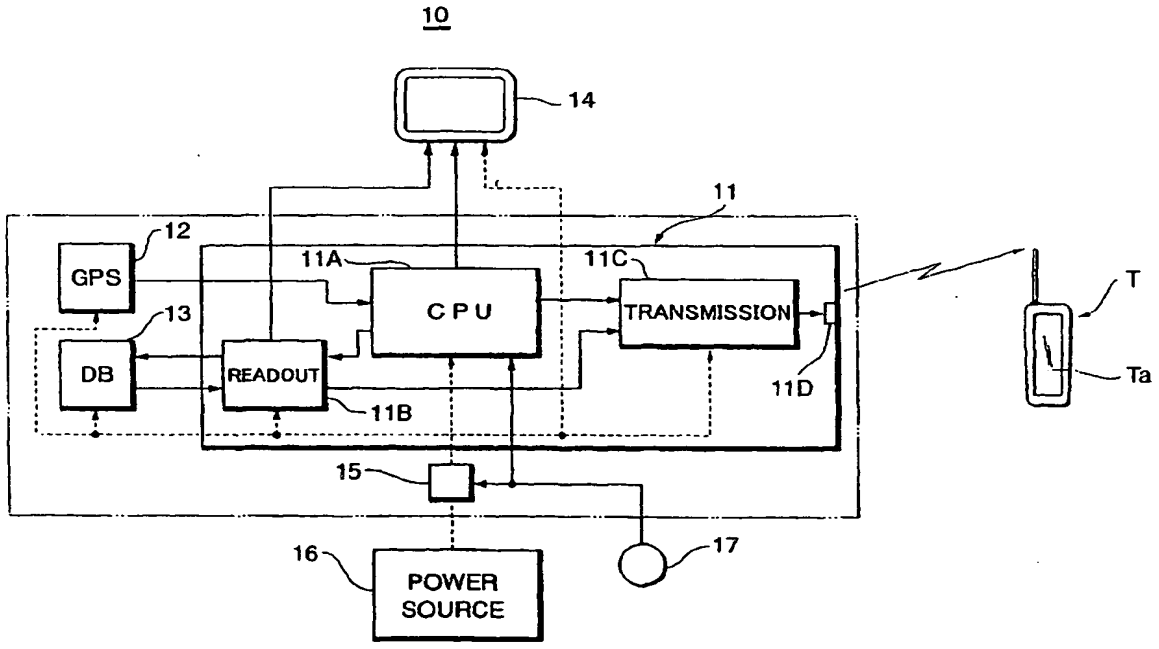
FIG.1



EP 1 122 516 A3

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EUROPEAN SEARCH REPORT

Application Number
EP 01 10 2336

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X Y	DE 199 23 750 A (BRUST HANS DETLEF) 25 November 1999 (1999-11-25) * column 3, line 57 - column 4, line 62 * * column 6, line 57 - column 6, line 60 * * column 8, line 49 - column 9, line 37 * * claim 1; figure 1 *	1-4,6 5	G01C21/26
Y	DE 198 28 077 A (BOSCH GMBH ROBERT) 30 December 1999 (1999-12-30) * column 3, line 10 - line 47 *	5	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

G01C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	13 August 2003	Yosri, S

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 10 2336

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